UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/636,161	08/10/2000	SHUMIN WANG	98124X205487	6517

29050 7590 12/20/2001

PHYLLIS T. TURNER-BRIM, ESQ., LAW DEPARTMENT
CABOT MICROELECTRONICS CORPORATION
870 NORTH COMMONS DRIVE
AURORA, IL 60504

EXAMINER	
UMEZ ERONINI, LYNETTE T	
ART UNIT	PAPER NUMBER
1765	6

DATE MAILED: 12/20/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-6

Office Action Summary	Application No. 09/636,161	Applicant(s) WANG ET AL.	
	Examiner Lynette T. Umez-Eronini	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-31 is/are pending in the application.

4a) Of the above claim(s) 28-31 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-27 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) 28-31 are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-27, drawn to system for polishing, classified in class 252, subclass 79.1.

   II. Claims 28-31, drawn to method of polishing, classified in class 438, subclass 692.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process of using that product, such as polishing a non-semiconductor surface.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Phyllis Turner-Brim on December 4, 2001 a provisional election was made without traverse to prosecute the invention of I, claim 1-27. Affirmation of this election must be made by applicant in replying to this Office action. Claims 28-31 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Election of Species

6. This application contains claims directed to the following patentably distinct species of the claimed invention:

A_1 liquid carrier is a nonaqueous solvent

A_2 liquid carrier is water.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims

are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

7. Claim 1 is generic to a plurality of disclosed patentably distinct species comprising a liquid carrier. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

8. During a telephone conversation with Phyllis Turner-Brim on 12/17/2001 a provisional election was made without traverse to prosecute the invention of a liquid carrier, claim 3. Affirmation of this election must be made by applicant in replying to this Office action. Claim 2 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rej ctions - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1, 3-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (US 5,770, 095), in view of Kaufman et al. (US 5,783,489) and Romberger et al. (US 5,230,833)

Sasaki teaches a polishing (system for polishing) agent (column 1, lines 6-10) comprising: (i) water (column 4, line 53); (ii) an oxidizing agent such as H_2O_2 (column 4, line 3-5 and 53); (iii) phosphonic acid (column 3, line 49), which is the same as at least one polishing additive; and (iv) an abrasive (column 8, lines 5-10 and column 10, lines 10-16 and 43-46).

Sasaki teaches a phosphonic acid (column 3, line 49) is the same as at least one polishing additive. However, Sasaki differs in failing to teach one polishing additive that increases the rate at which the system polishes at least one layer of the substrate, **in claim 1**.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention that using Sasaki's additive along with the other components of the polishing slurry and varying the additive concentration by optimizing the polishing efficiency of the slurry would result in one polishing additive that increases the rate at which the system polishes at least one layer of the substrate for the purpose of

selectively polishing one layer of material on a substrate relative to a different material on a substrate.

Sasaki differs in failing to teach one polishing additive that is selected from the group consisting of:

di-, tri-, and poly-phosphonic acid, phosphonoacetic acids, and mixtures thereof, **in claim 7**;

ethylene di-phosphonic, 1-hydroxyethylidene-1,1-diphosphonic acid, and a mixture thereof, **in claim 9**;

aminoethylethanolamine, polyethyleneimine, and a mixture thereof, **in claim 14**; and

2-aminoethyl phosphonic acid, amino(trimethylenephosphonic acid), diethylenetriaminepenta(methylenephosphonicacid), hexamethylenediaminetetra(methylene phosphonic acid), and mixtures thereof, **in claim 19**.

Kaufman teaches a polishing slurry that includes and are not limited to phosphonic acids such as aminotri(methylenephosphonic), 1-hydroxyethylidene-4-diphosphonic, hexamethylenediaminetetramethylene phosphonic, and diethylenetetramine pentamethylene phosphonic acid (column 6, lines 40-55) and Romberger teaches a polishing slurry comprising aminoethylethanolamine (column 9, lines 23-50).

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Sasaki by using the phosphonic acid compounds as taught by Kaufman for the purpose of promoting stabilization of polishing slurry against settling, flocculating, and decomposing and using the aminoethylethanolamine compound as Romberger for the purpose of increasing the polishing rate of the slurry.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner can normally be reached on Second Friday.

ltue
December 17, 2001

BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700